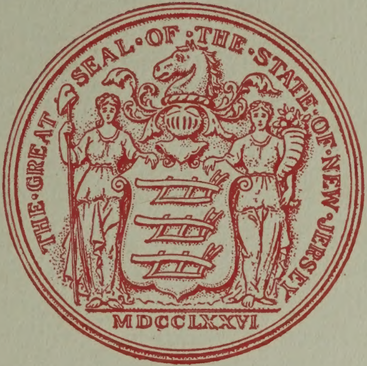
STATE OF NEW JERSEY

The HIGHWAY DEPARTMENT

A Report for 1942



SPENCER MILLER, JR.
State Highway Commissioner

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To: His Excellency, the Governor, the Legislature and the People of the State of New Jersey.

I am pleased to present for your information this condensed report of the New Jersey State Highway Department for 1942. This report, the first printed in more than 20 years, is designed to acquaint you more fully with the operations of this important State agency. The complete official report of the Department may be consulted either in the State Library or the State Highway Department offices.

The State Highway Department went on a war footing when War was declared in December 1941, and has continued on that basis during the year 1942. It will remain there until victory is won!

During the calendar year 1942 all of the Departmental policies have been shaped and all the activities have been directed toward the single objective of contributing every possible aid to the Nation's war effort.

While restrictions incident to the prosecution of the war made it impossible to proceed with any normal program of highway construction, a substantial amount of necessary work has been carried to completion. Twenty-three contracts in all have been awarded. Of these, eleven were military and naval access roads undertaken at the specific request of the United States Government; two were strategic military network projects and ten were regular State Highway contracts. In spite of the intense competition for construction services there was an average of better than three bids on each of the projects.

The reorganization of the State Highway Department, which had become a pressing necessity, has been carried forward in broad outline during the past year. The basis of this reorganization was the survey and report prepared by Mr. Sidney Goldmann and Mr. Thomas Graves, entitled "The Organization and Administration of the New Jersey State Highway Department" and made public in

1942. Among the most important changes which have been carried out have been the separation of the engineering and business functions of the Department into two divisions, the engineering functions being placed under the authority of the Acting State Highway Engineer and the business functions under the authority of the Administrative Assistant; the separation of the Real Estate Division from the State Highway Engineer and placing it directly under the State Highway Commissioner; the introduction of a plan for staff conferences and meetings; the institution of important legal, planning and personnel changes. This functional reorganization has brought about an increase in the efficient operation of the department.

Satisfactory human relations within the State Highway Department are regarded as one of the most important criteria of sound administration. An entirely new approach to the personnel problem was accordingly instituted. A personnel officer was appointed and a policy of "Open Door" was adopted. Any employee in the department who had a grievance or a suggestion which he wished to make was granted an interview with the personnel officer and secured a prompt and speedy adjustment of his grievance. Shop committees were encouraged and grievance machinery for the department was instituted. In addition the publication of "The Highway," a monthly bulletin, has given each employee a feeling of pride in his work and a more intimate knowledge of the policies of the Department.

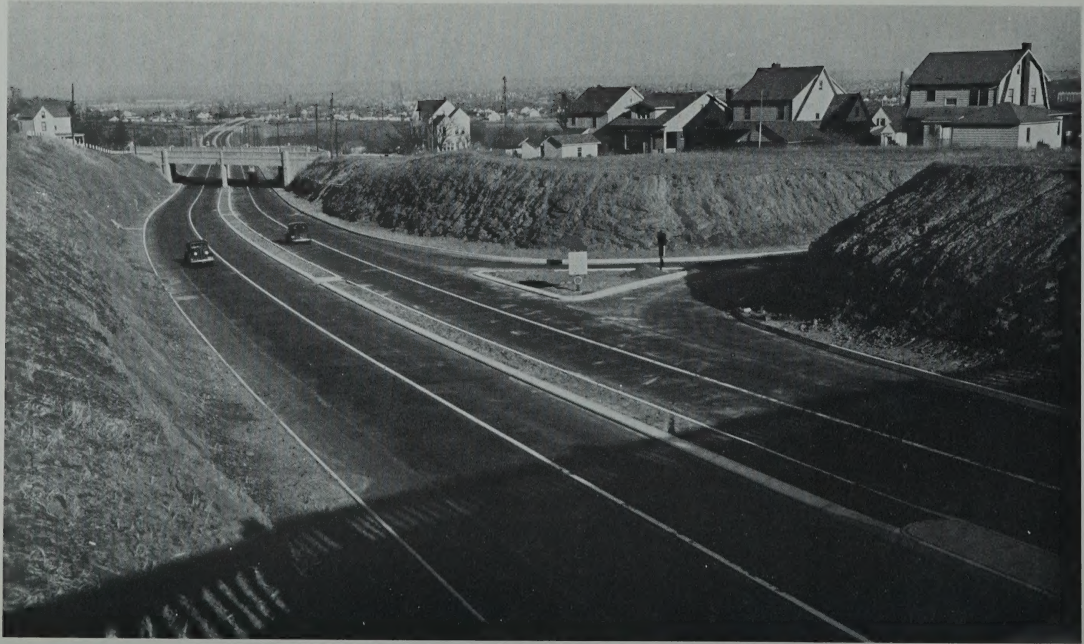
Existing salaries and classifications of all employees were examined, and an extensive series of adjustments in both salaries and classifications were consummated. The result of this undertaking brought forth good fruit and improved the general morale among the employees of the Department.

A definite determination on the part of the department to cooperate fully in upholding the Civil Service Laws and the Rules of the Civil Service Commission has resulted in a greatly improved situation. Sick leaves and vacations are now granted to all hourly employees, as well as the salaries classifications.

But beyond all these changes which have been brought about within the Department there has been kept steadily before all the employees of the Department a living connection between the nearly four hundred employees on the fighting front and those on the highway front at home.

In the pages which follow an attempt has been made to summarize in brief and readable form the activities of the State Highway Department for the year 1942. It is hoped that this brief report will enable State officials as well as private citizens to understand how one branch of the State's business is being administered by a devoted group of public servants who are seeking to serve the public interest.

Spencer Miller, Jr.
STATE HIGHWAY COMMISSIONER.



The Clifton Bypass—Route 6—Passaic County

CONSTRUCTION

The outstanding feature characterizing the construction work of the Department was the degree to which Federal Aid Procedure and Preference Ratings, and their interpretation and application entered into the prosecution of construction operations.

A memorandum from the Public Roads Administration under date of December 29, 1941, rescinded approvals previously given covering Regular Federal Aid construction programs, and outlined the new procedure, of submitting projects for consideration. Federal-financed projects had already been limited under the Public Roads Administration "Stop Order", of December 2, 1941, to those certified as essential to the National Defense and approved by the War Production Board.

On April 9, 1942 the War Production Board issued Conservation Order No. L-41 which prohibited the undertaking of new projects unless covered by a Preference Rating Certificate issued by them. All requests for preference ratings, whether or not Federal Aid was involved, were required to be submitted to the War Production Board through the Public Roads Administration.

Controlled Materials Plan

Toward the close of the year the Department was informally advised that the War Production Board would institute a revised procedure to be known as the "Controlled Materials Plan" to be placed in operation on July 1, 1943.

This will control the distribution of critical materials through a number of Federal Claimant Agencies representing the Army, Navy, and essential Government functions to assure a balance between supply and demand, so that materials will be available to meet essential programs and schedules.

The Claimant Agency which will control the critical materials required for highway construction operations will be the Office of Civilian Supply and the Department's relations with this Office will be through the Public Roads Administration.

Strategic Military Network

Two projects were undertaken on the Strategic Military Network under the Defense Highway Act of 1941.

One is for the paving of Route 6 from Union Avenue, Little Falls, to Valley Road, Clifton, Passaic County, which will close the last gap on this major cross-state highway leading to the George Washington Bridge, the Lincoln Tunnel, and the Northern Metropolitan Area. This project is of considerable significance from a military standpoint, as well as that of civilian evacuation for the densely populated areas hemmed in to the east of the barrier ridge through which it passes.

The other project, the dualization of Route 39, from Bordentown to Mansfield Square in Burlington County, connecting with the Fort Dix Access Road, will provide a modern traffic artery from Trenton to Fort Dix.

Military and Naval Access Roads

The Military and Naval authorities particularly stressed the need for improved highway facilities for access to Army and Navy establishments and War Industries.

Projects were undertaken at the Naval Drydock and Supply Depot at Bayonne; Picatinny Arsenal at Spicertown; Fort Dix; Camp Kilmer; Naval Air Station at Lakehurst; Motor Reception Park at Carteret; New York Shipbuilding Corporation at Camden; Federal Shipbuilding at Port Newark, and Air Associates at Bendix.

The Bendix and Lakehurst projects are completed and the Bayonne Naval Access Road opened to traffic.

Plans were prepared for access to the Coast Guard Station on Island Beach in Ocean County; Camp Evans in Monmouth County; and the improvement of Port Street in Newark, from the Airport to the Port Terminal; and the intersection of Route 25 and Port Street at the Brewster Aeronautical Plant.

These projects were financed by the Federal Government under the Defense Highway Act of 1941, which provided a more liberal policy in the expenditure of Federal Aid funds, permitting for the first time the use of those funds for right of way purchases.

The Department has endeavored to design and locate these Access Roads so that the full value of the investment in them will be preserved after the war. The facilities under construction at Picatinny Arsenal, for example, were designed to fit into the future development of State Highway Route 6 and 6-A in the Dover area, and represent a direct contribution toward development of the State Highway System.

Hudson & Manhattan Railroad Bridge Conversion

Plans were also prepared for the conversion to highway traffic of the upper deck of the former Hudson & Manhattan Railroad Bridge over the Passaic River between Newark and Harrison. This will provide relief for the over-burdened Bridge Street and Clay Street Bridges in this area, in addition to aiding the large war industries in Harrison.

Material Shortage

Many difficulties were encountered in obtaining essential materials for Military and Naval Access Roads, and considerable effort was expended in the design and redesign of bridge, pavement, and drainage structures to eliminate the use of critical materials.

On the Bayonne Naval Access Road, for example, steel beams for the railroad bridge were secured from second-hand sources and a new design developed so that they could be utilized. Structures have been designed on other Access Roads to fit certain types of materials which were known to be available. A new concrete pavement design was developed to eliminate steel reinforcing and a new design of joint which eliminated the use of steel.

Federal Aid Secondary System

In accordance with Rules and Regulations approved by the Public Roads Administration, the State Highway Department is required to select and designate a Federal Aid Secondary System that shall not exceed ten per cent of the highway mileage of the State as shown by latest available records of the Department.

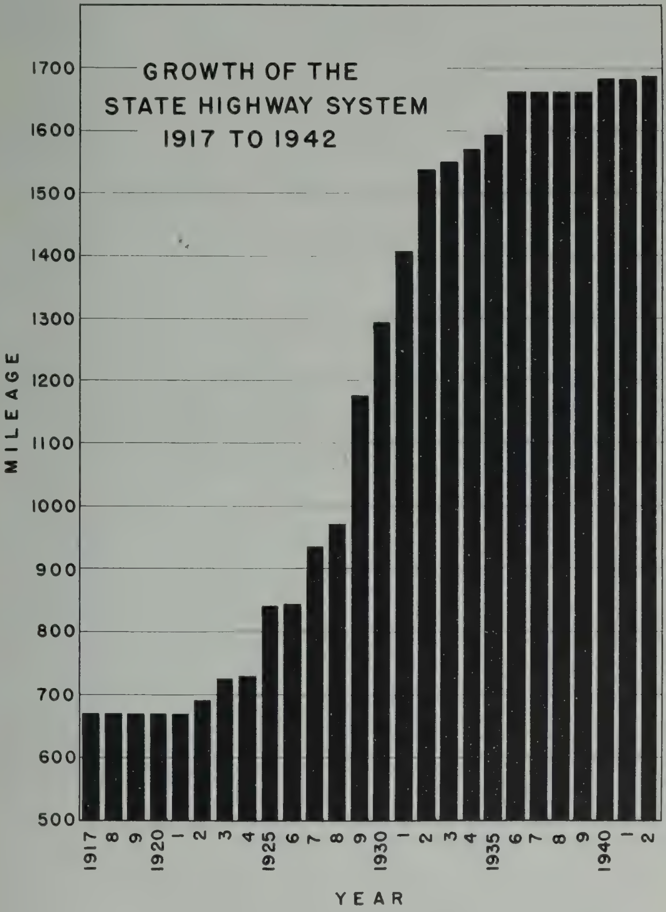
Pending a consideration of appropriate data being developed by the Highway Planning Survey, the selection of the system has been deferred, and projects have been constructed as interim contracts selected with the best judgment possible on sections of road which will qualify for inclusion in this System.

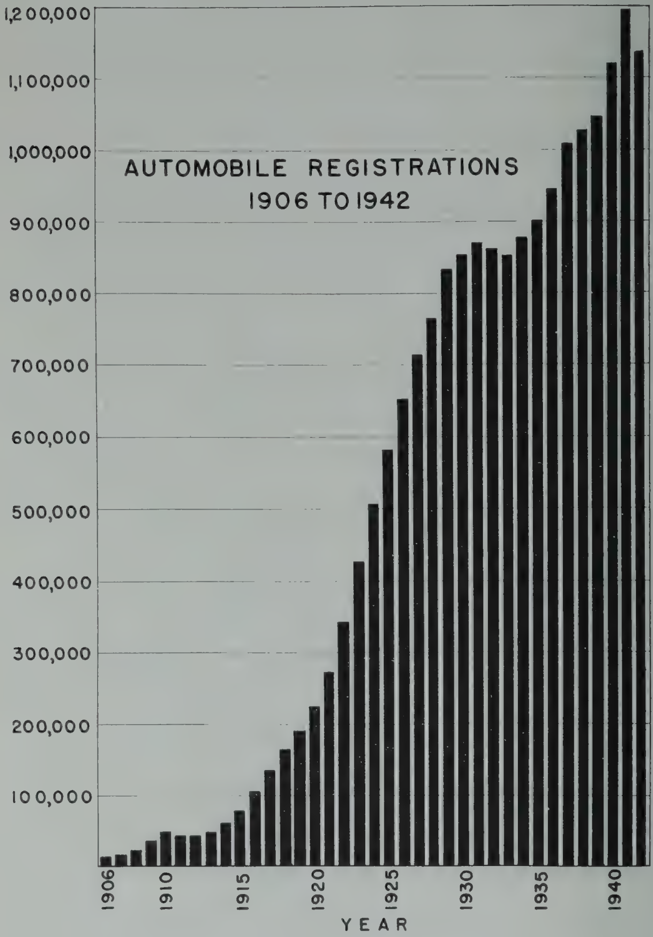
Seven additional Secondary contracts were completed last year, bringing to 38 the number of interim projects which have now been constructed.

Operations

Projects covering 69 miles of highway construction, 25 stream bridges, five railroad grade separations, and 11 highway grade separations were completed. Dual paving projects were completed on the Clifton By-pass, Denville Relocation on Route 6, and the White House Relocation on Route 28. The dualization of Route 4, from South Amboy to Cheesequake, and Route 29, from Meeker Avenue to the Lehigh Valley Railroad in Newark, was also completed, together with the paving of Route 44, from Pennsville to Salem.

Contracts covering 32 miles of highway construction, 17 stream bridges, five railroad grade separations, and four highway grade separations were under construction at the close of the year.




AUTOMOBILE REGISTRATIONS
1906 TO 1942
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
1906
1910
1915
1920
1925
1930
1935
1940
YEAR

NEW JERSEY STATE HIGHWAY DEPARTMENT
CONSTRUCTION DIVISION
CONTRACTS AWARDED IN 1942

Route	Section	LOCATION	COUNTY	TYPE OF PAVEMENT — MILEAGE Concrete	Bit. Conc.	Gravel	Grading	Total Mileage	Adjusted Contract Amount	Amount Completed in 1942
4	45	Cape May Ship Canal Temporary Bridge Approaches	Cape May		0.501			0.501	$44,497.49	$43,177.49
*4&35	11-B	Grade Separation at Oak Street, Sayreville	Middlesex		0.216			0.216	68,703.49	68,703.49
6(1917)	16	Broadway & Jersey Ave., Gloucester & Brooklawn	Camden	1.628	0.430			2.058	308,769.52	
6	9A	Union Avenue-Valley Road (dual paving)	Passaic	2.620				2.620	465,459.57	11,361.95
18	1	Old Bridge — Route 4	Middlesex			4.274		4.274	319,631.95	165,679.04
28	25&26	Bridges over Station Rd. & No. Branch of Raritan River	Somerset						266,476.71	265,230.31
29	3C	L. V. R. R. to Meeker Avenue (dualized)	Essex	0.836				0.836	70,735.25	70,735.25
35	38	N. Y. & L. B. overpass — Morgan (substructure)	Middlesex						108,607.00	
39	1B&10A	P. R. R. underpass — Bordentown (widening)	Burlington						77,370.50	42,553.77
39	1C&2A	Bordentown — Mansfield Square (dualized)	Burlington	2.210				2.210	692,725.68	209,899.14
44	9	Wells at Verga	Gloucester						5,136.75	
56	1	Beach Thorofare Bridge, Atlantic City	Atlantic		0.440			0.440	1,166,718.34	473,652.41
		Access Roads to Military Establishments and War Industries (100% Federal Money)								
DA-WI	3	Access Road to Air Associates, Bendix	Bergen		0.916			0.916	21,847.95	21,847.95
DA-NR	2	To Naval Supply Depot, Bayonne	Hudson		0.497			0.497	295,679.57	246,500.47
DA-NR	5	Avenue "E", Bayonne	Hudson		0.530			0.530	73,714.45	34,496.18
DA-WR	2	Access Road at Picatinny Arsenal, Secs. 3 & 4A	Morris	0.746	0.453			1.199	830,208.42	420,899.24
DA-WR	5	Plainfield Avenue to Camp Kilmer	Middlesex	1.145				1.145	79,105.90	7,166.05
DA-WR	6	To U. S. Motor Reception Park, Carteret	Middlesex		1.940			1.940	141,459.95	21,051.25
DA-NI	4	Fairview Street & Morgan Blvd., Camden	Camden		0.785			0.785	134,421.90	125,050.00
DA-WR	1B(1)	Fort Dix Access Road, Section 1	Burlington	4.488				4.488	901,410.00	107,100.00
DA-WR	1(1)	Fort Dix Access Road, Section 2	Burlington	3.515				3.515	693,523.54	249,465.00
DA-NR	3	Central Avenue, Lakehurst	Ocean				0.087	0.087	1,026.90	1,026.90
DA-NI	6	Port Street, Newark, east of Doremus Ave.	Essex		0.113			0.113	7,410.00	2,093.68
		Miscellaneous State Highway Construction Performed by Maintenance Division for Construction Division							31,187.45	31,187.45
		State Highway Projects Completed in 1942		0.836	0.216			1.052	170,626.19	170,626.19
		State Highway Projects Carried into 1943		6.458	1.371	4.274		12.103	3,455,393.51	1,211,554.11
		Access Roads Completed in 1942			0.916		0.087	1.003	22,874.85	22,874.85
		Access Road Projects Carried into 1943		9.894	4.318			14.212	3,156,933.73	1,213,821.87
		Grand Totals		17.188	6.821	4.274	0.087	28.370	6,805,828.28	2,618,877.02

* Contract terminated.

NEW JERSEY STATE HIGHWAY DEPARTMENT
CONSTRUCTION DIVISION
CONTRACTS AWARDED PREVIOUS TO 1942

Route	Section	LOCATION	COUNTY	TYPES OF PAVEMENT — MILEAGE				Total Mileage	Adjusted Contract Amount	Amount Completed Previous to 1942	Amount Completed in 1942
				Concrete	Bit. Conc.	Gravel	Grading				
1		N. Y. S. & W. Overpass, Fairview	Bergen	0.110				0.110	$69,736.94	$4,932.90	$64,804.04
S-3	1	Erie R. R. & Berrys Creek Viaduct	Bergen						702,209.50		290,600.37
S-3	1-A	Rt. 2 to Rt. 3 (partial dual paving)	Bergen	1.461				1 461	218,997.43	197,941.27	21,056.16
S-3	1-B	Embankment Approaches to Viaduct	Bergen				0 379	0 379	209,237.98	196,910.04	12,327.94
S-3	3	Valley Rd.— Passaic Ave., Clifton (grading)	Passaic				3 155	3.155	189,753.87	161,335.63	28,418.24
4	1-B	South Amboy — Cheesequake (dualized)	Middlesex	2.761				2.761	357,002.28	165,693.50	191,308.78
4	41-A	Gordons Corner — Browntown	Mon. & Mid.		Roadside Improvement				21,018.73	8,952.63	12,066.10
4	42-A	Cheesequake — Browntown	Middlesex	3.146				3 146	449,005.53	422,794.49	26,211.04
6	8A&8B	Lexington Ave. — Valley Rd., Clifton (dual pav.)	Passaic	3.131				3.131	553,863.16	541,268.30	12,594.86
*6	9	Union Ave. — Valley Rd. (grading)	Passaic				2.476	2 476	298,955.94	248,361.74	50,594.20
6	21-A	Denville Relocation (dual paving)	Morris	1 082				1 082	326,024.53	314,291.81	11,732.72
25	7-B	Rahway — Woodbridge (widening	Union & Middlesex	1 026 1.895				2.921	151,710.92	147,354.10	4,356 82
25	30C	Removal Old Passaic River Bridge	Ess. & Hud.						87,753.28	87,665.53	
25	33-A	Deans — Cranbury (dual paving)	Middlesex	6.377				6 377	845,059.08	803,966.20	41,092 88
**25	34	Newark Viaduct (embankment widening)	Essex				2.012	2.012	173,082.29	94,022.03	79,060.26
28	22-A	Lebanon Relocation (dual paying)	Hunterdon	2.846				2 846	485,101.85		324,256.77
***28	23	Annandale Relocation (dual grading)	Hunterdon				1.752	1 752	188,757.46	188,374.70	382.76
28	24	Van Syckles Corner — White House (dual grading)	Hunterdon				3.453	3 453	141,771.90	92,020 00	49,751.90
28	25	White House — North Branch (dual grading)	Hunterdon) & Somerset)				2 214) 2 213	4.427	192,942.55	185,246.51	7,696.04
28	24A&25A	White House Relocation (dual paving)	Hunterdon	1.782				1.782	303,154.44		303,154.44
28	25B&26A	North Branch Relocation (dual paving)	Somerset	2.200				2.200	529,045.45		467,833.25
29	2-D	Morris Ave. — Rahway River (dualized)	Union	2.745				2.745	401,071.26	400,398.15	673.11
29	2-E	Rahway River — Westfield Ave. (dualized)	Union	1.472				1.472	392,076.59	385,278.85	6,797.74
33-35	I	Connection Rt. 33 to Asbury Ave. (grading)	Monmouth			2 799		2 799	185,324.01	178,100.00	7,224 01

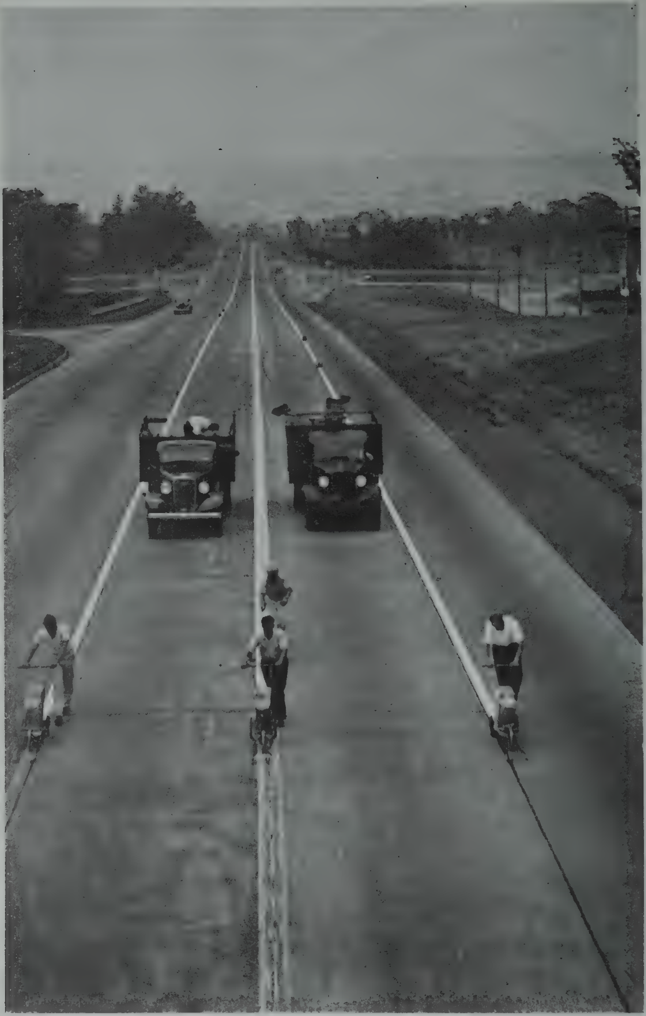
NEW JERSEY STATE HIGHWAY DEPARTMENT
CONSTRUCTION DIVISION
CONTRACTS AWARDED PREVIOUS TO 1942

Route	Section	LOCATION	COUNTY	TYPES OF PAVEMENT — MILEAGE				Total Mileage	Adjusted Contract Amount	Amount Completed Previous to 1942	Amount Completed in 1942
				Concrete	Bit. Conc.	Gravel	Grading				
		Federal Projects (Secondary Roads)									
33-35	1A & 2	Connection Andersons Cor. — Asbury Ave. Circle	Monmouth	2.039	0.760		0.967	3.766	221,223.27	134,300 00	86,923.27
35	38	Cheesequake Creek Bridge	Middlesex						942,478.35	63,923.90	688,453.43
35	38-A	Morgan — Laurence Harbor (dualized)	Middlesex	1.269				1.269	480,568.89		203,683.00
39	1B&10A	White Horse — Bordentown (dualized)	Mercer &) Burlington)	0.579) 2.246)				2.825	307,689.77	296,232.81	11,456.96
43&47	10&9	Lindenwold & Hurffville (drainage)	Cam. & Glou.						11,244.56		11,244.56
44	9	Westville — Pierces Corner (grading)	Gloucester				3.203	3.203	191,055.45	159,091.00	31,964.45
44	12	Pennsville — Hook Road	Salem	1.980				1.980	127,525.04		127,525.04
45		Newton Creek Bridge (North Approach Span)	Camden	0.182				0.182	56,687.24		56,687.24
45&47	17	Big Timber Creek Br. (North Approach Span)	Camden		0.139			0.139	65,151.62		65,151.62
54	1	Overpass of Route 42	Atlantic						58,805 25		58,511.22
FAS	40A(1)	Old York Road	Burlington			5.760		5.760	37,871.06	32,550.00	5,321.06
FAS	47A(1)	Raccoon Creek Bridge & Approaches	Gloucester		0.187			0.187	66,449.42	50,729.40	15,720.02
FAS	48A(1)	Kingwood — Byram Road, Section 5	Hunterdon		1.388			1.388	38,579.92		38,579.92
FAS	55A(1)	56A(1) 57A(1) 58A(1) 59A(1) — 5 Bridges	Burlington						75,070.93	45,142.10	29,928.83
FAGS	27A(1)	C. R. R. N. J. — West Avenue, Sewaren	Middlesex		0.340			0.340	205,364.27	175,545 19	29,819.08
FAGM	30C(1)	D. L. & W. — Danforth Avenue, Madison	Morris		0.170			0.170	68,332.48	68,013.13	319.35
FAGM	31(1)	D. L. & W. — Riverview Drive, Totowa	Passaic		0.300			0.300	166,486.45	52,668 05	113,818.40
		Railroad Crossing Protection							34,540.52	27,748.22	6,792.30
		State Highway Projects Completed in 1942		34.014	0.899	2 799	21.824	59.536	6,649,123 84	5,326,866 66	1,322,257.18
		State Highway Projects Carried into 1943		6.315				6.315	3,285,962.57	151,589.43	2,033,338.04
		Secondary Projects Completed in 1942			2.385	5.760		8.145	692,695.05	452,396.09	240,298.96
		Grand Totals		40.329	3.284	8.559	21.824	73.996	10,627,781.46	5,930,852.18	3,595,894.18

* Includes additional compensation appropriated by 1942 Legislature to cover claim of contractors.

** Contract terminated.

*** Contract abandoned and terminated.



Multiple Line Painting Operations

MAINTENANCE

Proper maintenance of New Jersey's State Highway System never was more important. Shortages of materials, loss of manpower, the need of meeting probable emergencies, and keeping the roads up to standard for military uses—all these challenged the ingenuity of the maintenance personnel, who have met successive maintenance problems with resourcefulness.

Emergency Bridge Protection

A number of important State bridges carry a heavy volume of military and defense traffic. It was necessary to consider the possibility of sabotage to these structures. To meet any such eventuality there was purchased and placed in storage a large quantity of material for use in the rapid replacement of structures which might be destroyed or seriously damaged.

Arrangements were also made with the State Guard for protecting a number of these bridges. Due to reductions in the manpower of the Guard, the number of structures under protection decreased as the year progressed and it was evident that all fixed-post guarding would have to be discontinued.

A system of patrolling was instituted with the cooperation of the State Police, Motor Vehicle Inspectors and Local Police. This is recognized as not being adequate, however, to protect these structures properly. Conferences with the Public Roads Administration and the Civil Defense Authorities indicate that New Jersey's problem in this respect is similar to that existing in neighboring States and throughout the country.

Snow Removal

Great difficulty was experienced in organizing snow removal forces, for the reason that a number of contractors disposed of their equipment and were not in a position to cooperate. Other contractors were engaged in activities for the Army and Navy and were not able to undertake snow removal at all. It was, therefore, necessary to consolidate certain sections, and lengthen out sections assigned to other contractors.

Various problems in formulating plans for the season were encountered, due to restrictions on supplies and curtailed operations of service stations. The Naval Authorities, in particular, stressed the importance of keeping the highways clear of snow. With their cooperation, it was possible to straighten out a number of troublesome features.

Snow removal costs were less than in 1941 due to a lower than average snowfall. It is not proper, however, to figure on a reduction in the cost of snow removal on the average. In setting up funds for such operations, the maximum should be estimated rather than the average.

With the addition of new sanding and cindering equipment, the snow removal program was further improved. Skid-proofing operations will probably never be entirely satisfactory to some portion of the travelling public, because there are motorists who expect ideal driving conditions regardless of the weather. On the whole, however, our snow removal and ice control operations have met with the approval of the motoring public.

Signs

Because of metal restrictions, there were no new installations of this type of sign. It was possible to do a small amount of replacement work by turning in broken signs to the Rahway Reformatory and having them recast for repair work. All new installations have, of necessity, been made with signs constructed of temporary types of material. Ordinary boards, laminated wood and synthetic fiber materials have all had their place in this program.

A considerable number of signs were erected marking Civil Defense Routes intended for the use of civilians if the main highways are preempted by the military authorities.

Also, it was necessary to take down all "Forty-Five Mile Speed Limit" signs and erect 1,680 "Thirty-Five Mile War Speed" signs.

In addition, 6,197 cautionary and directionary signs and 9,822 route markers were repainted.

Tests and experiments were also undertaken to improve the visibility of the signs. Investigation revealed that light striking the smooth surface on the letters causes glare, particularly at night, making them ineffective from certain positions. A new type of letter surface was devised consisting of a field of small pyramids especially designed to disperse the light and eliminate this condition.

Line Painting

For the control of traffic movements and protection of pedestrians at signal lights and school zones, 7,467,735 lineal feet of traffic lines were painted.

In accordance with permissive legislation and to conserve materials, the minimum width of line painted was reduced from six to four inches, and considerable lengths of broken rather than continuous lines were painted.

Formerly traffic lines were of six and twelve inch widths. The new lines are of four, six, eight and twelve inch widths.

Landscaping

Landscaping was limited to the replacement of material which had died and the maintenance of existing installations. This work is of material aid in the maintenance of slopes, and constitutes a very necessary operation.

If landscaped areas were completely neglected they would grow wild, with resultant economic loss and damage. The conservation of landscaping work already done demands a certain minimum of maintenance work in order to conserve the State's investment.

Mud-Jacking

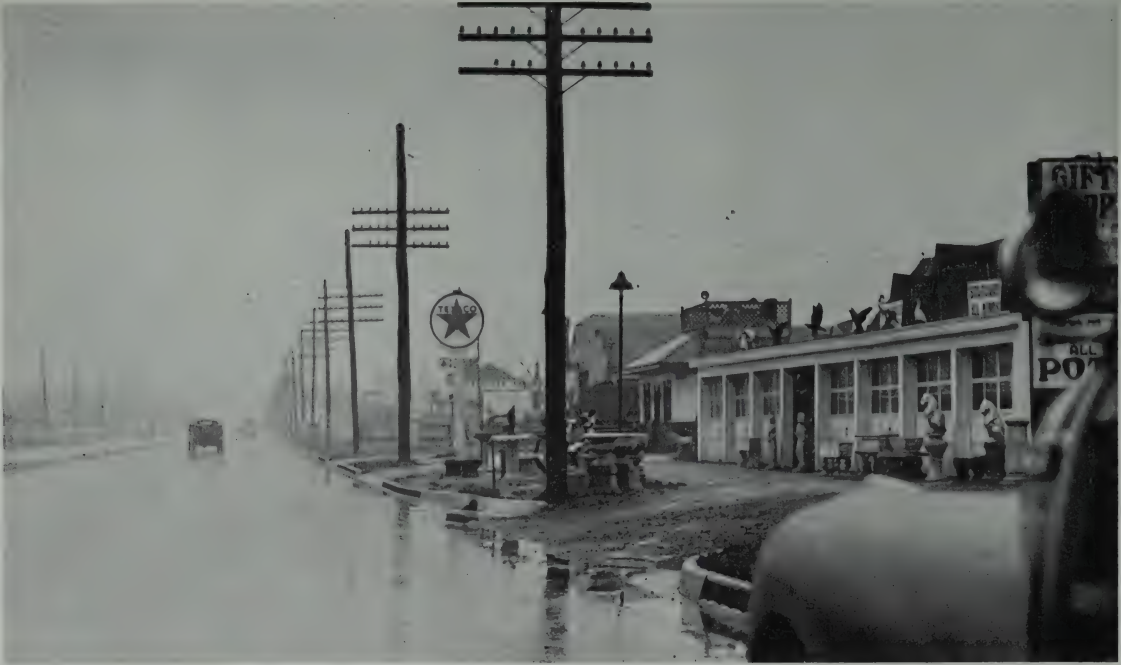
Mud-Jacking of concrete pavements was the largest maintenance operation, some 81,684 square yards of concrete pavement being mud-jacked.

This method of adjusting settlements and deficiencies is done with the standard commercial type of mud-jack equipment, and is less costly than the ripping up of old slabs.

Encroachments

Present day highways are finished in a far more attractive manner than those constructed 20 years ago, and it is unfortunate that this initial appearance cannot be uniformly maintained. In several cases where important highways have been built through beautiful open country, they are now lined with an almost continuous series of gasoline filling stations, garages, produce stands and signs of all varieties. In many instances there are encroachments on the highway right of way consisting of semi-permanent structures, temporary stands and fixed and movable signs. While a continual battle has been waged against these encroachments, with varying degrees of success, a lack of clear-cut and readily enforceable laws governing such matters has been largely responsible for many of the difficulties in the way of complete success.

There is a growing sentiment in this State in favor of cleaning up the roadsides and controlling the nature of so called "improvements" on abutting properties. This sentiment should be fostered and developed into a powerful movement by a general educational campaign. Such



Typical Encroachment on Route 25

a campaign should result in an aroused public opinion which would demand the cleaning up of many of the present "sore spots" and prevent the development of new ones.

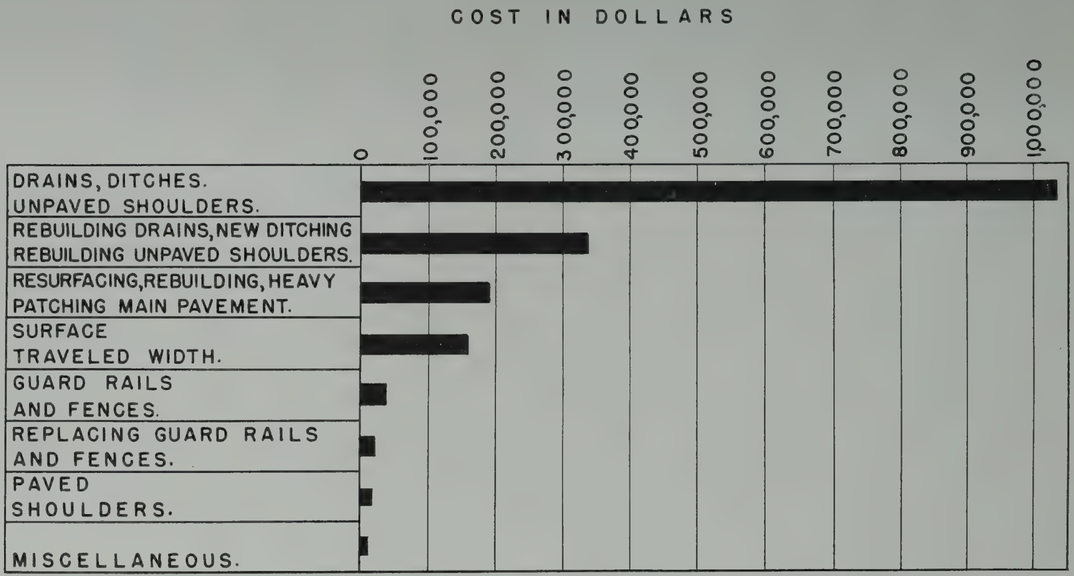
On several occasions there have been attempts to eliminate advertising signs from the rights of way of State Highways, but at no time have the endeavors been entirely satisfactory. Many of our heavily travelled highways are literally lined with signs of all sorts and descriptions and the resulting appearance is decidedly objectionable. There are certain laws in existence which were designed to prevent this condition. These are, however, principally observed in the breach.

If the Department were vested with the power of summary removal of signs from the rights of way, a considerable contribution would be made toward clearing up this situation. It is possible that there may be objections to granting such powers to the Department. If there are, some equally satisfactory method should be devised and the necessary laws enacted to bring about the elimination of the present forest of signs along our highways.

No Passing Zones

The establishment of "No Passing Zones" on highways, and the marking of the same, has been generally accepted as a desirable procedure by practically all States. At present, the New Jersey Traffic Act does not provide for the establishment of such zones, their marking or the enforcement of the "No Passing" feature.

The establishment of "No Passing Zones" is a valuable contribution to the safety of the travelling public, and legislation should be enacted to permit the setting up and marking of such zones, in conformity with the National standard.



ANALYSIS OF MAINTENANCE COSTS—1942.

Material Shortages

The effect of material shortages is reflected in maintenance costs. While the mileage under maintenance increased, the total expenditure decreased $70,572.00 as compared with the previous year. This reduction is largely a question of deferred work. It will be necessary at some future time to perform a large amount of additional maintenance because of these shortages.

PAVEMENT TYPES MAINTAINED—1942

Permanent Type			
Concrete	1,379.3		
Asphalt Block	6.4		
Stone Block	8.1		
Brick	1.6		
Bituminous Concrete	165.9	1,561.3	
Non-Permanent Type			
Bituminous Concrete	36.0		
Macadam	29.2		
Gravel	32.9	98.1	
Graded & Drained—Preparatory to Paving	27.8	27.8	
Grand Total		1,687.2	Miles

MAJOR MAINTENANCE OPERATIONS—1942

Mud Jacking	81,684 square yards
Shoulders Resurfaced	58,600 square yards
Macadam and Bituminous Macadam Surfacing	10,703 square yards
Concrete Surface	6,760 square yards
Miscellaneous Paving	3,700 square yards
Guard Rail Constructed	50,056 lineal feet
Sewers and Drains	9,871 lineal feet

Traffic Lines

Four Inch Lines	5,911,223 lineal feet
Six Inch Lines	468,841 lineal feet
Eight Inch Lines	926,666 lineal feet
Twelve Inch Lines	161,005 lineal feet
Total	7,467,735 lineal feet

Signs, Signals, Posts Erected

Wood and other Temporary Type Signs	3,192
Metal Signs and Posts	1,150
Route Markers	552
Reflector Signals	449
Stop Street Signs	408
Wooden Posts	156
Bridge Maintenance Projects	118

Typical Unimproved Township Road

Same Road After Improvement

STATE AID

In accordance with the Statute, the sum of $6,735,000.00 was distributed among the 21 Counties of the State. Allocations of this sum are made in accordance with the distribution formula based on population, area and road mileage.

State Aid to Municipalities

Since the passage of the Herrick Act in 1916 to the end of 1942 the municipalities of New Jersey have received State Aid for the construction, grading and drainage of their unimproved roads in a total amount of $39,650,000.00.

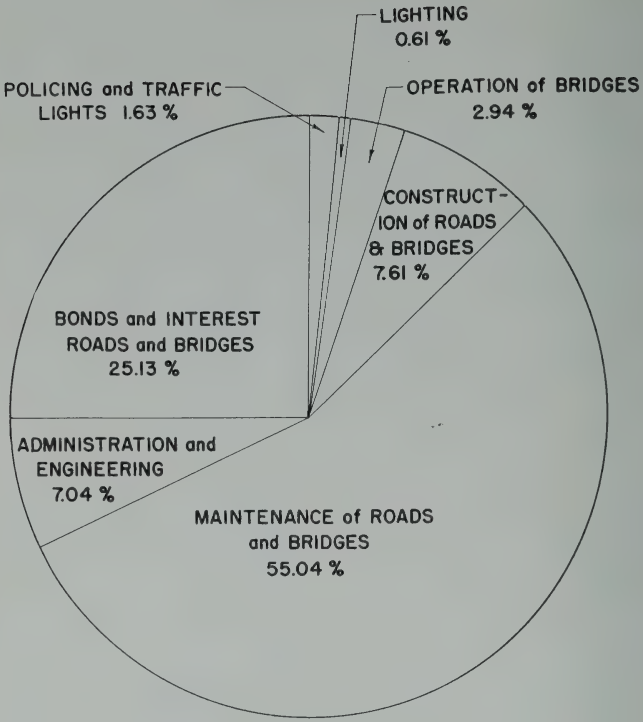
From 1916 to 1919 the State Aid available was $5,000.00 in each County or $105,000.00 for the State. Subsequent legislation through the years has increased this amount to $125,000.00 in each County.

Originally Townships only were eligible to receive State Aid. This was subsequently revised to include Boroughs, Towns and Villages, and Cities with a population up to 14,000.

The municipalities of New Jersey have constructed, with State Aid funds, some 4,026 miles of roads with various types of surfaces. There are still, however, over 6,000 miles of unimproved municipal roads.

In 1942 construction was completed on an additional 111 miles, compared to 184 miles in 1941. The decrease in mileage constructed was due to the inability to secure materials required for certain types of construction, which were frozen, and their use limited by Government order.

The funds not used are being held to the credit of each municipality for the time when work may be resumed. Pursuant to the Statute, the balances are certified to the State Treasurer and may be used for the purchase of government securities.



MOTOR VEHICLE AID TO COUNTIES

YEAR — 1942

APPROVED ALLOCATION of FUNDS

1942

APPORTIONMENT OF MOTOR VEHICLE AID FUND TO COUNTIES

New Jersey Population by Counties—1940 Census
County Areas—1930 Revision

County	1942 County Road Mileage	% of Total Mileage	Population 1940	% of Total Population	County Area in Square Miles	% of Total Area	Average % of County Road Mileage, Area & Population	Apportionment of $6,000,000.00	Apportionment of $735,000.00	TOTAL
Atlantic	332.970	5.380	124,066	2.982	610.310	7.421	5.261	$315,660.00	$35,000.00	$350,660.00
Bergen	470.770	7.606	409,646	9.847	246.170	2.993	6.815	408,900.00	35,000.00	443,900.00
Burlington	463.540	7.489	97,013	2.332	827.120	10.057	6.626	397,560.00	35,000.00	432,560.00
Camden	283.130	4.574	255,727	6.147	226.335	2.752	4.491	269,460.00	35,000.00	304,460.00
Cape May	171.780	2.775	28,919	0.695	450.910	5.483	2.984	179,040.00	35,000.00	214,040.00
Cumberland	552.320	8.923	73,184	1.759	674.330	8.199	6.294	377,640.00	35,000.00	412,640.00
Essex	176.180	2.846	837,340	20.128	129.720	1.577	8.184	491,040.00	35,000.00	526,040.00
Gloucester	381.230	6.159	72,219	1.736	340.625	4.142	4.012	240,720.00	35,000.00	275,720.00
Hudson	96.394	1.557	652,040	15.674	60.480	0.735	5.989	359,340.00	35,000.00	394,340.00
Hunterdon	195.420	3.157	36,766	0.884	439.120	5.339	3.127	187,620.00	35,000.00	222,620.00
Mercer	168.059	2.715	197,318	4.743	227.900	2.771	3.410	204,600.00	35,000.00	239,600.00
Middlesex	298.322	4.820	217,077	5.218	324.440	3.945	4.661	279,660.00	35,000.00	314,660.00
Monmouth	335.120	5.414	161,238	3.876	534.040	6.493	5.261	315,660.00	35,000.00	350,660.00
Morris	271.010	4.379	125,732	3.022	480.190	5.839	4.413	264,780.00	35,000.00	299,780.00
Ocean	529.320	8.552	37,706	0.906	754.810	9.178	6.212	372,720.00	35,000.00	407,720.00
Passaic	231.110	3.734	309,353	7.436	198.650	2.415	4.528	271,680.00	35,000.00	306,680.00
Salem	342.316	5.531	42,274	1.016	389.370	4.734	3.760	225,600.00	35,000.00	260,600.00
Somerset	203.060	3.281	74,390	1.788	305.020	3.709	2.926	175,560.00	35,000.00	210,560.00
Sussex	292.100	4.719	29,632	0.712	535.310	6.509	3.980	238,800.00	35,000.00	273,800.00
Union	143.985	2.326	328,344	7.893	104.940	1.276	3.832	229,920.00	35,000.00	264,920.00
Warren	251.460	4.063	50,181	1.206	364.650	4.433	3.234	194,040.00	35,000.00	229,040.00
TOTALS	6,189.596	100.000	4,160,165	100.000	8,224.440	100.000	100.000	$6,000,000.00	$735,000.00	$6,735,000.00

State Aid Maintenance

With the construction of a considerable mileage of municipal roads, the problem of properly maintaining them became a burden upon the municipalities, as they had to bear the full cost of maintenance without assistance from the State.

In 1929, $10,000.00 was appropriated in each County for the purpose of aiding the municipalities in the maintenance and repair of these roads, and this was increased in 1940 to $25,000.00 in each County.

The Counties submitted schedules for 1942 funds totalling an estimated $568,746.21, of which the State's share was $511,871.66. This amount was for the maintenance of 753 miles of roads previously built with State Aid Funds at an average cost of approximately $755.00 per mile.

Dirt Road Maintenance

When the 1930 Legislature increased State Aid to municipalities for construction to $100,000.00 in each County, a clause was incorporated in the Law which permitted the counties to apply for aid under this Act for the maintenance and repair of unimproved roads in the Townships, Towns, Boroughs and Villages. (Unimproved roads are those on which municipalities had never received State Aid for construction.)

The amount each county could apply for was originally limited to 25 per cent of the total available, and this was changed in 1937 from 25 per cent to $50,000.00. These funds are paid to the county, if applied for, and apportioned to the municipalities for maintenance and repair of roads.

Practically all the counties apply for this so-called "Dirt Road" money. In 1942, they requested $950,000-00, representing all of the State's share or 90 per cent of the estimated cost of the proposed work; the municipal-

MUNICIPAL ROADS COMPLETED—1942

Type	Mileage	Total Cost
Gravel	37.97	$206,371.45
Gravel, Bituminous Surface Treated	10.72	64,893.56
Gravel, Calcium Treated	27.84	157,409.53
Lignin Binder Treatment	5.24	5,550.59
Calcium Chloride Treatment	11.07	5,577.05
Reinforced Concrete	0.30	21,476.53
Plain Concrete	0.43	55,171.05
Bituminous Concrete	4.16	121,963.20
Type "A" or "T"	3.16	75,450.25
Bituminous Penetration Macadam	5.72	161,031.93
Grading and Drainage	2.51	7,282.11
Foundation	2.10	26,935.62
Totals	111.22	$909,112.87

MUNICIPAL ROADS UNDER CONSTRUCTION AND APPROVED FOR CONSTRUCTION, DECEMBER 31, 1942

Type	Mileage	Total Cost
Gravel	74.21	$376,578.14
Gravel, Calcium Chloride Treated	52.43	282,856.73
Gravel, Bituminous Surface Treated	48.05	149,730.66
Type "A" or "T"	40.66	469,070.82
Bituminous Penetration Macadam	37.75	432,954.77
Bituminous Concrete	19.56	332,993.45
Bituminous Surface Treatment	4.28	12,777.76
Sheet Asphalt	2.45	84,333.31
Tar Soil Stabilization	1.55	8,000.00
Reinforced Concrete	1.36	50,386.89
Grading and Drainage	1.32	21,894.66
Plain Concrete	1.13	88,888.87
Storm Sewer	0.08	4,242.43
Totals	284.83	$2,314,708.49

ities being required to contribute the remaining 10 per cent.

Tar Soil Stabilization Roads

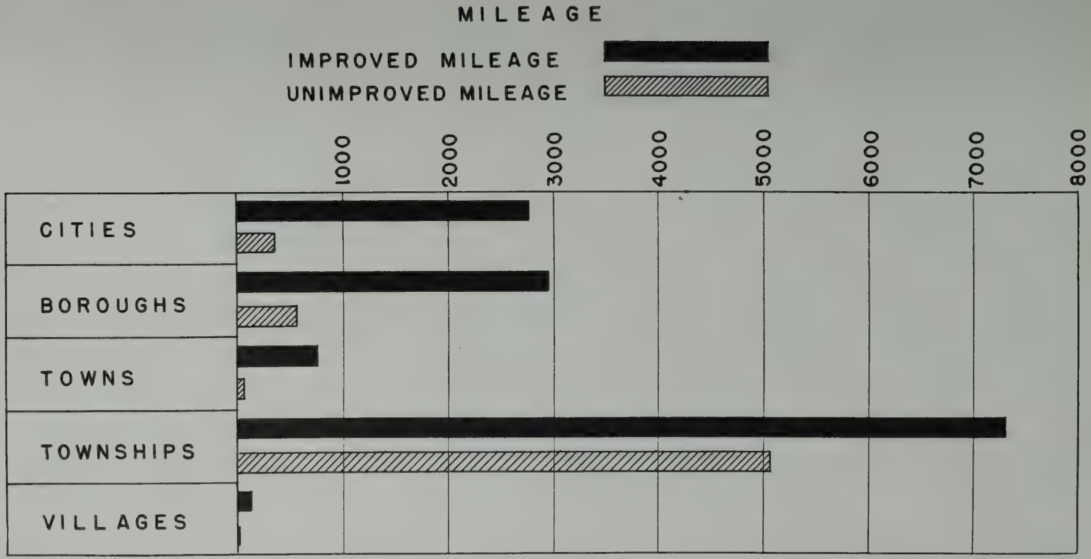
A construction project was undertaken in Mercer County on the Cranbury Neck Road with tar stabilization. Tar has been used in the construction and maintenance of gravel and stone roads for many years, the tar acting as the binder as well as the waterproofing agent.

During the past few years, the use of tar has been extended to include the stabilization of natural soils where the clay contained in those soils constituted the binder. The tar waterproofs and modifies the clay without impairing its binding properties.

In stabilizing the natural soil, it is modified so that, acting as a foundation, it will support the loads coming upon it without undue distortion during all seasons of the year. This effect may be obtained by the use of tar or asphalt on many New Jersey roads. Where heavy clay soils prevail, however, they can be most economically stabilized by the incorporation of sand or similar fine aggregate in addition to the tar.

By making use of the natural soil present in the project with the least possible addition of other materials, the foundation can be built of local materials at low cost.

There are some sections of southern New Jersey where good gravel is very scarce and this type of road will enable the Department to construct roads in these sections without the necessity of providing good gravel, and at a reasonable cost.



NEW JERSEY MUNICIPAL ROAD MILEAGE

TOTAL MILEAGE—IMPROVED-13,937-UNIMPROVED-6097

REAL ESTATE

The former practice in land acquisitions was to utilize the services of real estate brokers and appraisers on a fee basis in practically all cases involving properties over $500.00. The discontinuance of this policy has resulted in a considerable saving, and in the future, with more extensive construction programs, it will undoubtedly be much larger.

The new policy is to rely to a greater extent upon the appraisals made by the Department's Right of Way Agents. Outside real estate appraisers and other specialists are employed only when special conditions warrant.

The list from which appraisers and witnesses were formerly selected was completely revised during the year. Appraisers and witnesses now being employed are selected solely on the basis of their integrity, ability and experience.

An indication of the effectiveness of this new policy is the fact that, since it was instituted, 319, or 77 per cent, of the 413 parcels of land under acquisition were settled by direct agreement with property owners.

The remaining 94 parcels, or 23 per cent of the total, were referred for condemnation proceedings, but one-quarter of them would have had to be condemned in any event, because of inability to locate owners or because titles were involved.

The number of cases settled by agreement would be higher were it not that outside appraisals had already been secured and negotiations started in a number of cases that came before the new State Highway Commissioner as unfinished business.

The friendly relations established with the Public will be enhanced as the new land acquisition policy becomes more generally known throughout the State, and should result in a larger number of cases being settled in the future without resort to condemnation.

Acquisitions

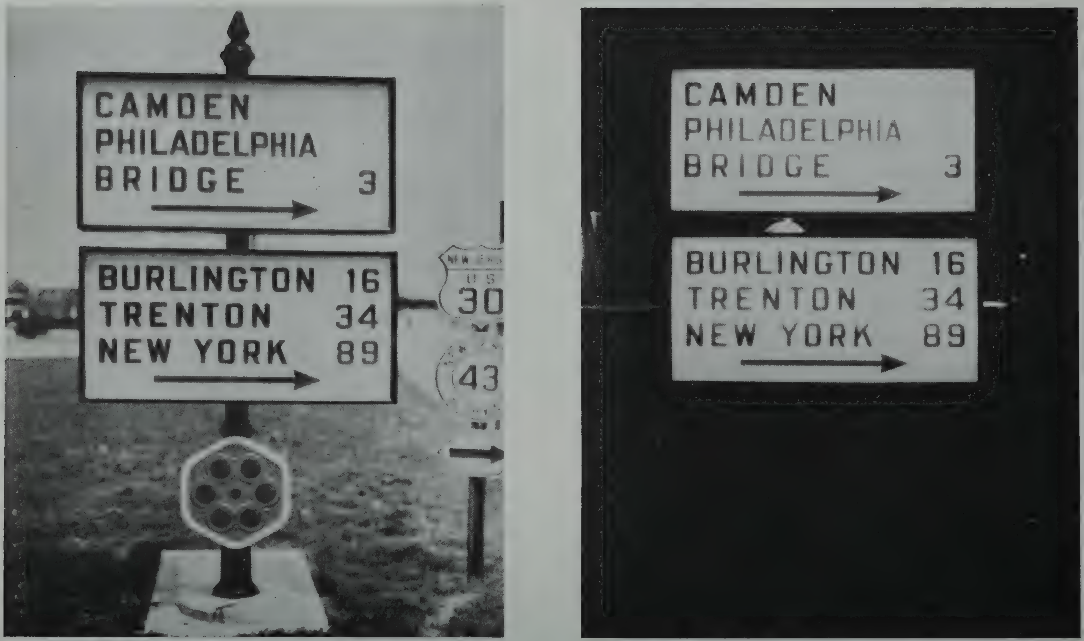
Preference was given during 1942 to land acquisitions on Military and Naval Access Roads. Negotiations were particularly successful in the right of way acquired for the Access Road to Picatinny Arsenal. This involved 48 parcels of land, on which numerous buildings were located. Within 40 days appraisals were made, negotiations conducted and agreements reached on 33 parcels. Provision was also made for the removal of buildings and obstructions, which permitted the contractor to proceed without delay.

Wilkinson-Gaddis Property, Route 21

An outstanding accomplishment in land acquisition was the settlement of the Wilkinson-Gaddis Company case on State Highway Route 21 in Newark. Through this settlement it is now possible to eliminate a very troublesome traffic condition which has existed for many years on this route at Parkhurst Street. There was also effected an arrangement with the City of Newark, whereby a number of long standing differences were resolved.

Appraisals and Estimates

Appraisals were made for the Motor Vehicle, Tax, Weights and Measures Departments, and the State Police and State Planning Board. Assistance was rendered in approving right of way estimates submitted by the various Counties in connection with State Aid Projects.



Day

Night

Modern Fluorescent Signs

LIGHTING

Under the 100 Per Cent State Lighting Program, the State and County Joint Participation, and the Municipal Reimbursement Plan, more than 12,000 safety lighting units have been installed on the State Highway System.

100 Per Cent State Program

This includes the lighting of intersections of two State highways, bridges, viaducts, traffic circles, grade separations and cloverleafs. The policy is to install a sufficient number of units to provide adequate safety lighting. Under this program 4,188 units are now in operation at 262 locations along the State Highway System.

State and County Program

Intersections of county roads with State highways where installation of highway safety lighting can be justified, are lighted jointly by the State and county.

The size and location of the luminaries, mounting heights and other details must be approved by the Department. One-half of the cost of such installations and maintenance may be reimbursed to the county upon the presentation to the Department of properly receipted invoices. Installations must be approved by the State Highway Commissioner before reimbursement will be allowed and the necessary agreements consummated.

Through this joint program 1,560 highway safety lighting units at 958 intersections have been installed since its inception.

Joint Program with Municipalities

On any section of the State Highway System traversing a municipality, where there is an abnormally high night volume of automobile or pedestrian traffic, or the night accident rate warrants, the Department offers financial aid in the form of reimbursement to the municipality to improve existing lighting installations, or to install such new systems as may be required. Size and types of units, spacings and other details must be approved by the Electrical Engineer and the installations by the State Highway Commissioner before reimbursement can be allowed. Reimbursement in all cases is made in accordance with yearly agreements entered into between the State and the municipality involved.

One hundred ninety-four municipalities have negotiated for municipal safety lighting reimbursement and 6,383 units installed.

Reduction of Lighting

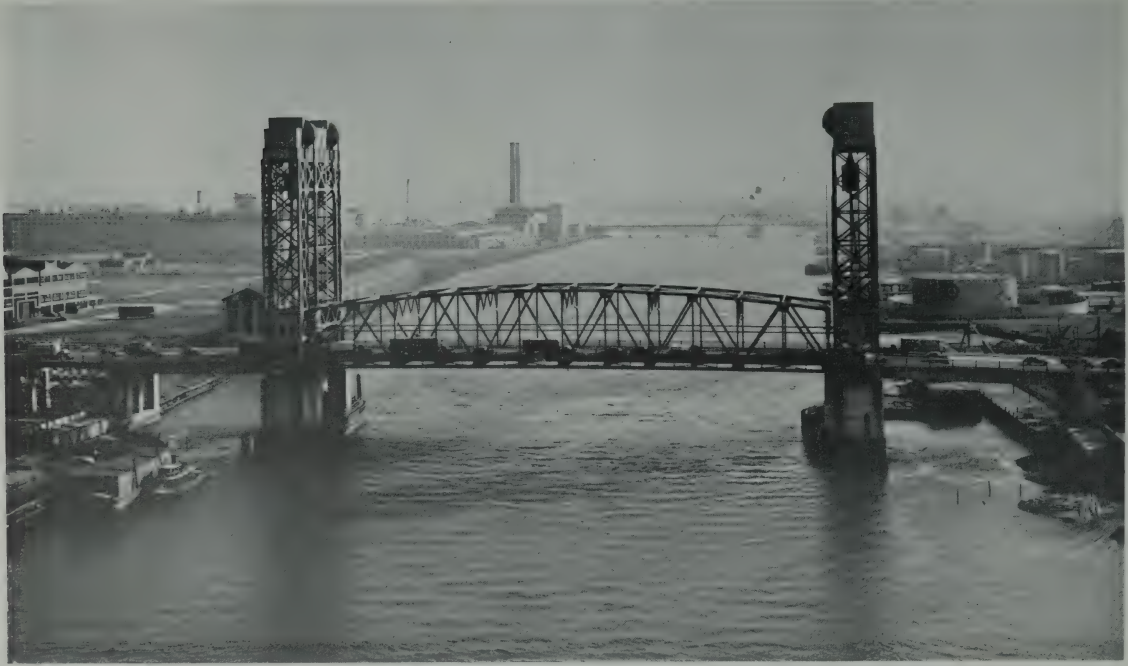
Early in the year it was decided that, in view of the reduction in traffic and as a war economy measure, highway safety lighting throughout the State should be reduced.

A survey was made of all highway lighting, including State, county and municipal installations, to determine at what locations lighting could be either reduced in intensity or discontinued for the duration. The survey was conducted at night and continued throughout the summer and fall. As a result, all counties and municipalities were notified of recommended reductions, and all 1943 agreements will be drawn accordingly. It is estimated that the reduction in highway safety lighting will result in a saving of $100,000.00 annually.

With State highway lighting it was possible to effect reductions immediately and 739 units were discontinued for the duration, which will result in a saving of $30,000.00 annually.

Coastal "Dimout"

To comply with Army regulations, 1,042 street lighting units were dimmed out along the seaboard area of the



The Passaic River Bridge Between Newark and Kearney—Route 25

State, and for approximately 10 miles inland from the coast, to control and limit sky glow.

The "dimming out" was accomplished by the installation of shields or the application of black paint. Where luminaries were visible from the sea, complete shielding on the seaward side was effected.

The Department was represented at a number of meetings of the Committee on Street and Highway Lighting of the Illuminating Engineering Society concerning sky glow. This Committee has cooperated with representatives of the Army and Navy in performance tests, and the formulation of procedures and regulations with respect to sky glow.

Defense Lighting

For defense purposes, 892 lighting units were installed on 32 movable-span and 13 fixed-span bridges. These installations are of a temporary nature as a safeguard against sabotage. All of the units are installed underneath the bridge structures and positioned to illuminate piers and abutments.

Electric Signs

The original electric cautionary and directionary signs were illuminated by incandescent lamps. Tests showed that the color, temperature and concentration of illumination of the incandescent bulb were not entirely satisfactory. New installations are of the fluorescent and neon-fluorescent types, which overcome the objections of the incandescent type, by providing a brighter and better diffused illumination.

Traffic Signals

Of the 132 traffic signals on the State Highway System, 62 are of the traffic-actuated "Normal Green" and 41 of the "Normal Out" type.

ELECTRICAL DRAWBRIDGE OPENINGS

Route	Location	County	No. Openings		Hours Delay to Traffic	
			1942 —	1941	1942 —	1941
25	Hackensack River, Kearny	Hudson	7210	2301	537	242
4	Raritan River, Perth Amboy	Middlesex	2436	2325	222	214
4	Island Heights, Seaside Heights	Ocean	2081	3832	221	211
4	Ocean City Bridge	Atlantic — Cape May	1516	2901	205	263
35	Manasquan River, Point Pleasant	Monmouth — Ocean	1339	4186	76	227
25	Passaic River, Newark	Essex — Hudson	1284	776	135	66
10	Hackensack River, Jersey City	Hudson	1083	1249	90	119
35	Shark River, Belmar	Monmouth	1013	1896	72	116
4N	Shark River, Belmar	Monmouth	1009	1889	75	131
35	Inland Waterway, Point Pleasant	Ocean	866	2472	65	158
13E	Lovelandtown Canal Bridge	Ocean	865	2340	110	126
4	Long Beach, Manahawkin Bridge	Ocean	850	1707	72	155
25	Cooper River, Camden	Camden	634	958	41	67
35	Cheesequake Creek, Morgan	Middlesex	577	854	39	60
4	Mullica River, Smithville	Atlantic — Burlington	380	519	36	55
44	Raccoon Creek, Bridgeport	Gloucester	362	284	40	28
44	Woodbury Creek, Woodbury	Gloucester	267	365	21	25
3	Hackensack River, Secaucus	Hudson — Bergen	257	365	31	40
36	Shrewsbury River, Highlands	Monmouth	256	351	30	45
6	Hackensack River, Little Ferry	Bergen	254	222	29	21
44	Mantua Creek, Paulsboro	Gloucester	252	323	26	53
4	Somers Point Bridge	Atlantic	124	284	15	34
25	Rancocas Creek, Bridgeboro	Burlington	123	355	11	33
34	Manasquan River, Manasquan	Monmouth — Ocean	117	439	10	27
44	Oldman's Creek, Nortonville	Gloucester — Salem	89	67	11	8
49	Maurice River, Millville	Cumberland	59	124	7	19
4	Bass River, New Gretna	Burlington	57	53	5	4
49	Cohansey River, Bridgeton	Cumberland	55	55	6	6
50	Tuckahoe River, Tuckahoe	Atlantic — Cape May	39	79	4	10
49	Menantico Creek, Millville	Cumberland	30	16	6	3
4	Nacote Creek, Smithville	Atlantic	25	23	2	3
35	Matawan Creek, Keyport	Monmouth	19	20	2	2
49	Alloway Creek, Quinton	Salem	19	14	3	2
		Totals	25,547	33,644	2255	2573

The essential difference between these two types of signals lies in the signal light indications, when there is no traffic on cross streets.

The Traffic Engineer of the Motor Vehicle Department cooperated with the Department's Electrical Engineer to determine where signals may be converted from "Traffic Actuated" type to the "Flasher Type" and another study is under way to discover which of the present "Normal Out" traffic-actuated signals should be converted to the "Normal Green" type.

Eight new traffic signals were placed in operation. Of these, five were installed at highway intersections and three for the control of traffic at Army posts.

Electrical Drawbridges

Time delay to vehicular traffic was reduced by 318 hours because of some 8,000 fewer electrical drawbridge openings than in 1941.

It is interesting to note that since the opening of the new 35-foot level bridge over the Passaic River, on Route 25, between Newark and Kearny, there were but 135 hours of time delay to vehicular traffic, compared with 992 hours delay in the last year of operation of the former low-level Bridge at this location.

The general decrease in bridge openings is confined principally to coastal streams, where eight bridges spanning the Shark River, Manasquan River, Inland Canal and the Lower Bays totaled 11,821 fewer openings, due to restrictions governing the operation of fishing and pleasure craft.

TESTING

Testing operations covered 7,079 samples of various types of materials used in highway construction. These included among others, portland cement and concrete sand, concrete and physical testing, bituminous materials and paint tests. Tests were made both in the laboratory and the field.

Core Tests

In the construction of concrete highways and bridges, it is important that the mixtures required for the concrete be very definite as to the quantity and quality of materials required. Of equal importance is the establishment of the weights of materials per batch, which involves the determination of the quantity and quality of each of the ingredients to be used, and the qualification of the equipment. This is done at the beginning of each project, or when a change is made in the character or the source of supply of any of the ingredients.

Investigations are made, upon request of the Engineer in charge of any project, when in his opinion, the concrete is not of the proper consistency. Reports were submitted covering 232 such inspections.

The specifications require that the concrete surface or foundation for any project be of a certain depth. After the concrete has attained a certain age, six inch cores are cut therefrom. Some 766 cores were cut and forwarded for testing to determine depth and compressive strength.

Paints

In cooperation with the Highway Research Committee of the National Highway Research Council exhaustive tests were conducted in an effort to predetermine and forecast the life expectancy of traffic paints. These tests are being conducted, in an effort to determine performance specifications rather than composition specifications.

If it were possible to predetermine the life expectancy of paints after their application to road surfaces, rather than wait from three to five months, it would permit development of specifications using "performance" tests rather than having to specify a definite composition paint. If paint could be purchased in accordance with "performance" tests, it would give a great deal of latitude to the manufacturer as to how the paint should be prepared to meet such tests.

The Department also cooperated with the War Production Board in an investigation concerning traffic paints for the purpose of securing information as to the best possible paint that can be made from available materials. This involved the application of nine paints to three types of road surfaces. They are examined once each month, but they have not been in service for a sufficient time, to draw any definite conclusions. However, the possibilities of preparing a satisfactory paint from available and domestic materials seem quite good.

Oil Deposits

Oil deposits were investigated on the ocean beach front in the vicinity of Manasquan for the purpose of determining whether the oil could be used for road purposes.

The color and general character of this deposit had the appearance of possible use for road construction. However, investigation showed that the cost of reclaiming this oil was too high to be economical.

Camouflaging

Some experiments were conducted in connection with the camouflaging of highways, involving the application of small quantities of different types of bitumens to different characters of aggregate to change their color, so that they may be used as a cover material for the application of a bituminous material on concrete surfaces.

General

The testing facilities were also made available to industries working on war contracts. Tests were made at one war plant in Trenton upon welded pieces of steel for the purpose of qualifying applicants as welders.

The Laboratory was also opened to students taking night engineering courses being conducted through Rutgers University. The instructions students receive are more readily absorbed when they are able to observe practical application of the test methods involved.

This New Equipment Replaced

World War No. 1 Relics

EQUIPMENT

Equipment operations are centered in the main plant and garage located at the Fernwood Service Station. Eight stations located at convenient points about the State service equipment operations in the several areas.

The main garage and auxiliary stations service and maintain 2,277 pieces of equipment.

Reduction in Mileage

A saving of 24 per cent in mileage operated was effected, highway vehicles travelling 5,844,872 miles compared to 7,708,361 miles in 1941. This mileage reduction was entirely voluntary, and before any of the restrictions incident to automotive travel were put into effect.

Conservation of Rubber

In accordance with requests from the Federal Government every effort was made to contribute to this important phase of the war effort. Only 334 new tires were issued, against 1,524 in 1941, and 544 tires were recapped, compared to 33 in the previous year, a saving of 78 per cent. The recapped tires are those salvaged from existing equipment and processed to obtain maximum wear.

New Equipment

Nineteen new trucks were purchased to replace units received as surplus stocks from the Federal Government following the First World War. In most of this older equipment, mechanical failures were frequent and performance left much to be desired. The new trucks are equipped with cinder spreaders and safety seats for the elimination of ice hazards.

Motor Rebuilding

So that the Department would not be compelled to

EQUIPMENT—1942

Snow Plows	615
Passenger Cars	414
Trucks	385
Sand Spreaders	160
Tar Kettles	104
Air Tools	96
Mowers	74
Mowing Machines	74
Graders	72
Miscellaneous Equipment	46
Pumps	45
Mixers	36
Weigh Batchers	28
Air Compressors	18
Traffic Line Markers	17
Rollers	13
Spray Outfits	12
Trailers	10
Mud Jacks	8
Plows	8
Vibrators	7
Lime Spreaders	6
Rotary Screens	6
Tractors	6
Water Wagons	5
Snow Loaders	4
Sweepers	4
Power Buckets	3
Electric Hammer	1
Total	2,277

rely on the uncertain market caused by the shortage of critical materials, a cylinder boring machine, a main bearing line tool, and a piston turning and grinding machine were purchased to supplement the machine equipment. It is now possible to rebuild motors completely with a precision which is equal to the quality of motors received in new equipment.

STATEWIDE HIGHWAY PLANNING SURVEY

The Statewide Highway Planning Survey was undertaken in cooperation with the Public Roads Administration of the Federal Works Agency. The primary purpose was to ascertain and assemble, in comprehensive form, complete information regarding the existing road systems of the State, their condition, the economic and social types of territories served, the traffic, and the sources and expenditures of all public revenues. These basic facts have been obtained, coordinated and analyzed.

The three general phases of the Survey consisted of road inventory, traffic and financial. The first is a study of the extent and condition of all road systems of the State; the second, the relative uses made of these facilities; and the third, a study of the income derived from the operation of these facilities and the cost to construct and maintain them.

The Survey, as originally outlined by the Public Roads Administration, contemplated a survey of rural roads only. But in a State such as New Jersey, with its large metropolitan areas where its more serious problems lie, it was realized, that to be of value, the Survey should include both urban and rural areas.

The following is a detailed description of the activities, accomplishments, and future plans of its three general phases.

Road Inventory

To secure a complete physical inventory of all roads in the State, every mile of highway in rural areas open to travel by automobile was covered by inventory parties in cars equipped with special odometers. All physical characteristics were noted, such as length, width, type and condition of improvement, bridges over five feet;

adjacent property improvements, such as homes, factories, business establishments, churches, airports, parks and recreational centers; in short, every definite origin and destination of highway traffic. This inventory was carried into urban areas on all through and main connecting roads and streets insofar as the physical characteristics of the roads were concerned.

An inventory of all grade crossings in rural and urban areas was made, either by actual survey or access to records of the Public Utility Commission, in sufficient detail to be used as a basis for a future elimination program. These records have been supplemented by accident data and train movements covering the period since 1933, secured through the cooperation of the railroad companies.

On all State Highways and main county roads, critical grades, curvatures and sight distances were measured and noted. All of this information has been assembled in tabular form.

Mapping

County base maps have also been drafted showing the data assembled in the field survey. These maps show all public highways and culture in rural areas adjacent thereto, corporate lines, parks, recreational centers, and lakes and streams. To secure accuracy as well as detail, the maps have been drafted on a scale of four inches to the mile, with the grid system of the United States Coast and Geodetic Survey as a base. For ease and convenience of handling they have been reduced to a scale of two inches to the mile. All monuments and triangulation stations of the survey are shown, and to insure accuracy, all available surveys of other agencies were used, such as traverses of State highways, county roads and railroads as well as riparian, county and corporate line surveys.

Base maps of the 21 counties are available on a large and small scale, and with other factual data secured in the Road Inventory are being used by the Army and Navy, war industries, Office of Price Administration, Civilian Defense, and others.

They are also being used as a base on which to record the type of pavement on all roads, the 24-hour annual average traffic on all sections of all roads, and school bus and postal routes.

A map of the entire State on a large scale is in course of preparation. It will be a composite of the several county maps and will show the State in great detail.

Traffic Survey

This Survey consisted of a classified density count of traffic at 378 key stations, counted 18 times annually on a pre-arranged schedule; 675 blanket count stations, counted seasonally four times a year; and 5,117 stations, counted for an eight-hour period one day a year. In this manner a count was secured at a total of 6,170 locations, which comprises approximately every alternate road intersection in the State in rural areas and on through roads and streets in urban areas.

The traffic was classified as to passenger cars; light, medium and heavy trucks; tractor-trucks; trailers and buses; and state of registration. Turning movements were recorded at all counting stations.

Through the 378 key stations and the 675 four-count stations, factors or controls were established for expanding the counts at the short count locations to obtain an estimate of the 24-hour annual average traffic on each mile of rural highway in the State.

These annual averages have been mechanically tabulated and, when used in conjunction with the Road Inventory tabulations, the vehicle miles driven on any section or system of Highways can be computed. Traffic figures are also being entered on the County Base Maps and will be used in compiling a traffic map of the State.

Loadometer Survey

This survey consisted of the operation of 36 loadometer weighing stations selected as typical as to class of traffic from the 378 key stations, and operated on the same schedule. At these stations commercial vehicles were weighed, commodities carried checked, origin-destination interviews held, and dimensions of trucks and tires secured. Approximately 30,000 commercial vehicles were weighed and interviewed.

The Traffic Survey started in February, 1940, and continued for one year on a carefully pre-arranged schedule. A good picture of the average highway traffic for that year, which was not affected by wartime conditions was secured.

Information as to loading practices and commodities carried have been furnished to the Office of Price Administration, at its request.

Financial Survey

The Financial Survey covered four phases, the fiscal, motor vehicle allocation, road use, and road life studies.

The *Fiscal Study* assembled data as to the income, expenditures and debts of the State, counties and all governmental subdivisions to secure a general knowledge of the whole tax burden. These data were secured for 1938, that year being selected as typical, and tables have been compiled covering this information. Data are being secured for subsequent years relative to highway expenditures and indebtedness to bring this information up to date.

The *Motor Vehicle Allocation Study* was based on an analysis of a 25 per cent sample of applications from 1939 motor vehicle registrations. The distribution between rural and urban areas, by locations within established population groups, type, manufacture and age of the motor vehicle registered and license fee paid was determined from this 25 per cent sample and expanded. This distribution was used to obtain information on the direct contributions made by the several population groups of motor vehicle owners for highway purposes.

Data for the *Road Use Survey* were obtained through questionnaires distributed through the high schools of the State. These questionnaires were made out by the students through interviews with a vehicle owner in their own family. Some 100,000 interviews were secured which were sampled down to approximately 20,000 for mechanical tabulation and analysis. The data secured embraced type, make and age of vehicle, mileage driven during the previous 12 months, and the road systems travelled. To supplement these data interviews were held with truck and bus fleet owners, to secure similar data. These have been analyzed, to ascertain the relative use of the different highway systems of the State by residents of the several population groups. Through this method direct benefits derived by each group can be measured.

Used in conjunction with the Allocation Study it is possible to compare the proportionate benefits received and contributions made by the several groups of highway users.

A digest of these questionnaires was made for the Office of Defense Transportation to obtain data on average mileage driven and driving habits of private car owners.

The *Road Life Study* made use of the records of the Department to show construction costs of all projects on the State Highway System each year from 1919 to 1942, as well as the type and nature of all construction and retirements of both roads and bridges.

From this information can be determined the probable average service life and the average roadway costs of the several surface types constructed.

SPECIAL ACTIVITIES

Study of traffic behavior was continued in an endeavor to improve features of design to allow for the normal reactions of the average user of highway facilities. Studies of many existing facilities were undertaken and solutions developed to eliminate congestion, time loss, and high accident frequency.

Progress was also made in measuring traffic time losses and capacities with respect to various types of intersection designs, to determine the best and most economical method to solve intersection problems. A large amount of data was obtained and basic theory developed covering traffic circles, in addition to the formula previously developed for intersections controlled by traffic lights.

Pavements

Studies were undertaken of pavement designs, without steel reinforcement, which would give promise of reasonably long life and service. A survey of concrete pavements without reinforcement built some 20 years ago indicated that plain concrete pavements consisting of rather short slabs could be expected to yield reasonably satisfactory results; provided they were constructed upon a layer of sub-base material, possessing good stability, drainage, and non-frost-heaving characteristics; and if some means were provided to increase load bearing capacity at the joints, such as the installation of concrete sills under the joints.

Additional studies were made to determine the behavior of various types of pavements constructed in the past to discover the nature, reason and extent of such defects as have become apparent after extended use. This information was utilized in redesigning certain pavements to prevent such defects in future construction.

Joints

The problem of keeping joints sealed against the entrance of water and foreign materials prompted the testing of wood as a possible solution. Numerous tests and installations were made in which pre-compressed wood was employed. Wood appears to give promise as a solution to this problem, but definite conclusions cannot be reached until enough time has elapsed to establish its ability to retain its expansive properties in actual service. Numerous other materials and mechanical devices were studied to determine means of preventing water seeping through the joints.

Studies of General Nature

Research pertaining to the nature and magnitude of stresses developed in concrete pavements both in early and later life were continued, and specific tests made to determine the influence of reinforcement steel at various concrete ages. Tests were also made to determine means of increasing the efficiency of such steel as is used in pavement construction.

Studies relating to the behavior of various types of sub-base materials, both natural and stabilized mixtures, were continued and their susceptibility to frost heaving, and erosion observed. Investigations point to the importance of suitable sub-base materials in prolonging the life of pavements. Considerable research remains, to determine the most satisfactory type and combinations of materials best suited for this purpose.

Statewide Bridge Survey

The Public Roads Administration requested information for the War Department as to the carrying capacity of all highway bridges in the State, except in urban areas, having a span of more than 20 feet. A survey was undertaken covering 2,272 bridges. This work was facilitated by the cooperation of the County Engineers who supplied information covering a large number of bridges. However, some 600 bridges had to be surveyed in the field and carrying capacities had not been calculated for some 300 others.

Rail Salvage

A Statewide Survey of non-operating trolley tracks in roads and streets was undertaken, except in cities with a population over 15,000. Subsequently it was decided that this work would be performed by the Metals Reserve Company of the War Production Board's Conservation Division.

This change in policy eliminated participation on the part of the Department, except on the State Highway System.

However, the survey was completed and a tabulation prepared of the tonnage of rail available for salvage and the cost of repairs to the track area with a suitable type of pavement.

There was also prepared, in connection with the Track Salvage Survey, a survey of abandoned bridges throughout the State which could possibly be used in new locations or salvaged for scrap. All of the above data have been made available to the War Production Board.

FINANCIAL

The amount of revenue anticipated for State Highway Fund purposes under the Highway Appropriation Act was $43,832,250.00.

The actual revenues received, from motor vehicle imposts, motor fuel taxes, the bus excise tax, Federal Aid and miscellaneous revenues, with an unappropriated balance at the beginning of the year, totaled $47,273,431.01, an increase of $3,441,181.01 over the amount anticipated in the Appropriation Act.

A transfer of $7,535,000.00 was made from the State Highway Fund to the General State Fund for municipal aid and general State purposes.

Appropriations of $7,696,648.80 were made for debt service and funding requirements of bonds; $9,885,000.00 as aid to the counties and townships for the construction and maintenance of their respective highway systems; $3,881,418.52 for the operation of other State Departments; $319,109.68 for salary bonuses to State employees, and $14,834,182.68 for the construction and maintenance of the State Highway System, a total of $36,616,359.68, and resulting in a surplus at the close of the year of $3,122,071.33.

In addition to funds available under the Highway Appropriation Act, the Federal Government allotted $4,173,015.01 for Military and Naval Access Roads; $318,420.00 for strategic military highways and $376,647.00 for the elimination of grade crossings and hazards, to be carried out under the supervision of the department.

The Government also alloted $127,368.00 for advance engineering studies on the proposed Route No. 100 and $2,579.10 for Defense Transportation Studies.

The following statements show the revised revenues and appropriations of the State Highway Fund as of the close of the fiscal year, December 31, 1942, the status of

Department Appropriations as of December 31, 1942, and the Assets and Liabilities of the State Highway Fund as of December 31, 1942, giving the comparison as of the same date the previous year.

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
STATEMENT OF REVENUES AND APPROPRIATIONS

Year — 1942

Anticipated Revenue of the State Highway Fund:		
Unappropriated Balance forward from Previous Year		$ 2,656,137.14
Motor Vehicle Fees, Fines, etc.		21,463,573 97
Motor Vehicle Inspection Fees		635,723.00
Tax on Motor Fuels		20,568,593.13
Bus Excise Tax		109,537.31
Federal Aid		1,496,574.00
Miscellaneous Revenue		343,292.46
Total Estimated Revenue		$47,273,431.01
Less Transferred to State Fund:		
For Municipal Aid	$3,000,000.00	
For General State Purpose	4,260,000.00	
For N. J. State Guard	275,000.00	7,535,000.00
Total Revenue and Balance Available for Appropriations		$39,738,431.01
Appropriations for Year 1942		
State Treasurer Debt Service:		
State Highway Bonds	$5,277,248.80	
Relief, Inst. & Agency Bonds	1,798,350.00	7,075,598.80
Funding $11,799,950.00 of remaining Bonds Authorized but not issued		621,050.00
County Aid		6,735,000.00
Township Aid		3,150,000.00
State Highway Department:		
Const. & Purchase of Right of Way, State Highway:		
Motor Vehicle & Gas Tax Funds (100%)	$3,791,343.07	
Federal Aid (Matched Money)	3,500,000.00	
Claims	97,339.61	
Maintenance of State Hway. System	3,539,000.00	
Operation of Bridges	360,000 00	
Elec. Installation & Maint. (Lights)	920,500.00	
Institutional Rds. & Approaches	200,000 00	
Plant & Equipment	200,000.00	
Administration, Engineering, Inspection & Administrative Cost of Acquiring Right of Way	2,226,000.00	$14,834,182.68
Motor Vehicle Department	$1,988,608.10	
Motor Fuel Tax Division	226,295 00	
Department of State Police	701,981.42	
Board of Commerce and Navigation	645,000.00	
Delaware & Raritan Canal Commission	13,000.00	
State Employees Retirement System	139,755.00	
Delaware River Joint Toll Bridge Comm.	135,779.00	
Budget Department	3,000 00	
Comptroller's Department	3,000.00	
State House Commission	20,000 00	
Compensation Awards	5,000.00	
Bonus (Chap. 118 & 275, P. L. 1942)	319,109.68	$ 4,200,528.20
		$36,616,359.68
Surplus		3,122,071.33
Total		$39,738,431.01

STATE OF NEW JERSEY

STATE HIGHWAY DEPARTMENT

Status of Department Appropriations as of Dec. 31, 1942

Classification of Expenditures:	Allocation of Funds Year — 1942	Disbursements Year — 1942	Outstanding Contracts & Commitments Dec. 31, 1942	Balance of Appropriations Dec. 31, 1942
Construction of State H'way System:				
Road Construction	$5,441,143.18	$2,822,069.20	$2,619,073.98	$ 0
Bridge & Grade Crossing Contracts	3,972,282.83	1,994,697.43	1,977,585.40	0
Purchase of Right of Way	6,011,980.14	1,455,842.12	4,556,138.02	0
Balance of Construction Program:				
Motor Vehicle Fees, Etc.	5,336,678.09	0	0	5,336,678.09
Federal Aid (Matched Money)	5,672,190.19	0	0	5,672,190.19
Construction Rt. 25, Sec. A, Road, Bridge and Right of Way	1,000,000.00	0	0	1,000,000.00
Claims	123,921.14	118,680.60	5,211.20	29.34
Bond Fund	1,000,195.44	0	0	1,000,195.44
Total State Highway Construction Funds	$28,558,391.01	$6,391,289.35	$9,158,008.60	$13,009,093.06
W.P.A. Sponsor's Share-State H'way. Proj.	708,490.49	252,104.02	305,489.32	150,897.15
Maintenance of State Highway System:				
Roads & Bridges	4,854,307.93	2,974,750.95	925,254.07	954,302.91
State Highway Lighting & Opera. of Bridges:				
Electrical Installations & Maint.	1,337,887.79	877,198.62	213,759.62	246,929.55
Operation of Bridges	420,427.90	339,502.24	6,942.10	73,983.56
Purchase of Plant & Equipment	280,615.39	69,080.95	148,013.94	63,520.50
Administration, Engineering, Inspection & Administrative Cost of Acquiring Right of Way	2,481,102.91	1,929,472.53	0	551,630.38
Total	$10,082,832.41	$6,442,109.31	$1,599,459.05	$1,041,264.05
Miscellaneous Projects:				
Institutional Roads & Approaches	272,800.25	226,895.27	45,904.98	0
Total (Departmental Appropriations)	$38,914,023.67	$13,060,293.93	$10,803,372.63	$15,050,357.11
Bonus	319,109.68	319,109.68	0	0
County & Township Aid (Mandatory):				
County Aid:	7,922,005.77	6,543,854.65	1,378,151.12	0
Maint., Const., Reconst. of Rds. and Bridges, Bonds & Int., Police, Lighting, Etc.				
Township Aid:				
Construction	4,279,870.79	1,950,752.27	2,329,118.52	0
Maintenance	990,377.84	384,082.57	606,295.27	0
State Aid to County Appropriations: (Chapter 395, P. L. 1912)	12,789.03	0	12,789.03	
Total (County & Twp. Aid Appropriations)	$13,205,043.43	$8,878,689.49	$4,326,353.94	$ 0
Federal Aid (Special Allotments):				
Highway Projects W.P.H. (100%)	0	0	0	0
Grade Crossing Proj. W.P.G. (100%)	37,138.07	18,087.27	0	19,050.80
Grade Crossing Hazards (100%)	1,760,856.02	346,959.78	252,401.33	1,161,494.91
Secondary & Feeder Rds. (50%)	918,355.76	186,872.77	178,838.69	552,644.30
Federal Defense Access Projects (100%)	4,173,015.01	1,119,539.56	2,704,601.45	348,874.00
Federal Defense Transportation Studies	2,579.10	2,579.10	0	0
Advance Eng. Studies Rt. No. 100	127,368.00	0	127,368.00	0
Strategic Highway Network	323,196.00	2,035.00	7,517.00	313,644.00
Total (Federal Aid Special Allotments)	$7,342,507.96	$1,676,073.48	$3,270,726.47	$2,395,708.01

STATE OF NEW JERSEY

STATE HIGHWAY DEPARTMENT

Statement of Total Assets and Liabilities
Years Ending Dec. 31, 1941 and Dec. 31, 1942

ASSETS

	Dec. 31, 1941	Dec. 31, 1942
Cash Balance	$8,639,446.51	$12,954,740.21
Cash Balance (Natl. Indust. Recov. Fund)	16,176.32	0
Cash Due from Motor Vehicle Dept. & Gas Tax Division Account of 1941 & 1942 Collections	2,572,149.91	1,766,097.40
Federal Aid Allot. (45% of P.W.A. Grant, Certified)	424,247.10	0
Federal Aid Allot. Regular 50%–50%	2,471,928.37	3,410,690.47
Federal Aid Allot. Natl. Indust. Recov. Fund	3,328.09	3,328.09
1930 Bond Issue Authorized (x)	11,799,950.00	11,178,900.00
Undistributed Material	457,062.68	448,398.84
Plant & Equipment	1,526,451.83	1,361,545.62
Loan to Port of New York Authority, Chapter No. 121, P. L. 1940	4,300,000.00	4,300,000.00
Federal Aid Allot. Secondary & Feeder Rds., 50%	223,025.00	0
TOTALS	$32,433,765.81	$35,423,700.63

(x) Under present plans, the 1930 Bond Issue Authorized but not sold ($12,421,000.00) is to be funded by the Appropriation of $621,050.00 each year. beginning with the year 1941.

LIABILITIES

	Dec. 31, 1941	Dec. 31, 1942
Road Contracts	$4,347,397.62	$2,619,073.98
Bridge Contracts	4,068,716.65	1,977,585.40
Claims	26,581.53	5,240 54
W. P. A. Sponsor's State Share:		
Projects in Work	558,662.39	305,489.32
Balance of Construction	153,162.85	150,897 15
Purchase of Right of Way	6,699,455.92	4,556,138 02
Balance of Construction Appropriation:		
Motor Vehicle Fees, etc.	1,617,215.22	5,336,678 09
Federal Aid Matched Money	3,921,757.52	5,672,190.19
Bond Funds	0	1,000,195 44
Route No. 25, Bridge, Road, Right of Way	1,000,000.00	1,000,000.00
Allotment to Counties for Maint. Const., Reconst. of Roads & Bridges, Bonds and Int., Police & Lighting, etc.	1,179,846.26	1,378,151.12
Allotment to Townships & Boroughs for Construction of Roads & Bridges	1,654,870.79	2,329,118.52
Allotment to Townships & Boroughs for Maintenance of Roads & Bridges	465,377 84	606,295 27
Allotment for Purchase of Plant & Equipment	80,615.39	211,534.44
Allotment for Maintenance of Highways, Roads & Bridges	1,315,307.93	1,879,556.98
Allotment for Lighting of State Highway System & Operation of Bridges:		
Electrical Installation & Maintenance	417,387.79	460,689.17
Operation of Draw Bridges	60,427.90	80,925 66
Allotment for Approaches to Public Institutions	72,800.25	45,904 98
State Aid Appropriations (Chap. 395, P. L., 1911)	12,789.03	12,789 03
Surplus Investment in Plant & Equipment	1,526,451.83	1,361,545 62
Reserved to Motor Fuel Tax Dept. for Unpaid Gas Tax Refund Claims	226,425.05	650,000 00
Compensation Awards (Other than Hwy. Dept.)	2,500.00	0
Allotment Township of Galloway	110,000.00	110,000.00
Allotment for Admin., Engr., Inspec. & Cost of Acquiring Right of Way	259,878.91	551,630.38
Unappropriated Balance	2,656,137.14	3,122,071.33
	$32,433,765.81	$35,423,700.63

PROBLEMS OF THE FUTURE

The war overshadowed the Department's normal operations in 1942 including any attempt to plan for the post-war era. Toward the end of the year, however, serious thought was given to the problems to be faced after the war. It is apparent that intelligent consideration must be given to the task of being prepared for the conversion to peace-time pursuits to prevent a breakdown of our economy.

The construction of highways has proven ideal as a means of providing employment and stimulating industry with resultant economic benefit. It is not a competitor of private industry, nor does it run counter to the principle of private enterprise. It is a distinct help to private business in that it starts a cycle of business movements which stimulates industry in everwidening circles.

A large construction program is indicated as a distinct means of cushioning the post-war readjustment. Experience gained during the Nineteen-Thirties proved that in order to be effective, post-war construction must be far in excess of any previous program to insure a full recovery.

New Jersey is faced with serious problems of locations because of the highly developed nature of the terrain through which new highway facilities must pass to accommodate the large volumes of traffic, and the selection of lines of location not only influences the cost but effects and forever determines the measure of solution effected. One of the first steps to be undertaken is the purchase of rights of way in advance of any construction program.

Some progress has already been made in the preparation of detailed plans for the proposed post-war program, and increasing results will be observed when present construction projects are completed and additional engineering forces made available.

Route 100

Approval of an allotment of Federal funds under the Defense Highway Act of 1941 was obtained to undertake the advance engineering for the development of Route 100 from Route 25, at New Brunswick, to the George Washington Bridge approach, at Fort Lee, which comprises an essential link in the proposed Boston-Washington, D. C. Highway. This project through the metropolitan area would be very desirable for undertaking immediately following the war. Approval by the Public Roads Administration is perhaps significant of the policy to be pursued by the Federal Government to take up the slack in industry and employment in the readjustment period following the war.

Federal Aid Formula

It is the expectation that the Federal Government will provide a large amount of funds to finance Public Works in the years following the war and that highway construction will comprise a large part of this program.

The method of proportioning such funds among the several States will be of vital concern to New Jersey. Federal Aid highway funds for expenditure through the Public Roads Administration have heretofore been apportioned to the States under a distribution formula of one-third population, one-third area, and one-third post road mileage. This is very unfavorable to the heavily populated industrial States, and represents a subsidy to States with large areas and small populations. Such a distribution is not consistent with traffic needs and in considering post-war plans, the present formula should be revised.

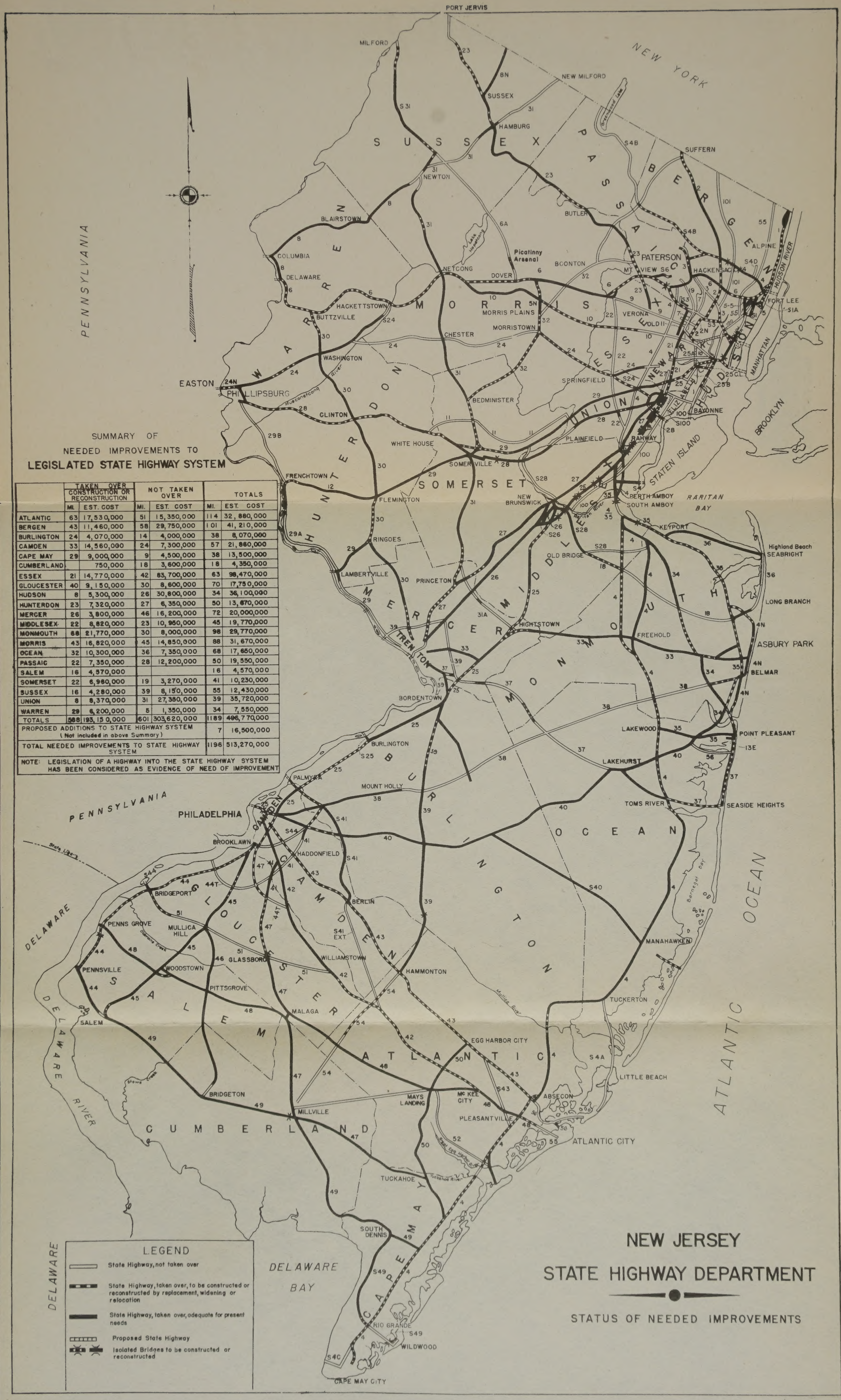
It is to be further expected that Federal participation will cover only a certain percentage of the cost, and that the States will need to finance the balance. New Jersey should be financially prepared to take advantage of the Federal program. Our State should establish a financial reserve, similar to those in New York State, Pennsylvania, and West Virginia where funds have been ear-marked for post-war construction.

The State Highway System

The following map shows the status of needed improvements to the Legislated State Highway System, which now comprises 2,306 miles, of which 1,687 miles forms the present operating State Highway System. In addition to the improvement of approximately 601 miles of Legislated State Highways not taken over, some 588 miles of highways now in the operating System requires reconstruction or other major improvements, at an estimated cost of $496,770,000.00.

NJDOT RESEARCH LIBRARY

NJDOT RESEARCH LIBRARY



SUMMARY OF
NEEDED IMPROVEMENTS TO
LEGISLATED STATE HIGHWAY SYSTEM

	TAKEN OVER CONSTRUCTION OR RECONSTRUCTION		NOT TAKEN OVER		TOTALS	
	MI.	EST. COST	MI.	EST. COST	MI.	EST. COST
ATLANTIC	63	17,530,000	51	15,350,000	114	32,880,000
BERGEN	43	11,460,000	58	29,750,000	101	41,210,000
BURLINGTON	24	4,070,000	14	4,000,000	38	8,070,000
CAMDEN	33	14,560,000	24	7,300,000	57	21,860,000
CAPE MAY	29	9,000,000	9	4,500,000	38	13,500,000
CUMBERLAND		750,000	18	3,600,000	18	4,350,000
ESSEX	21	14,770,000	42	83,700,000	63	98,470,000
GLOUCESTER	40	9,150,000	30	8,600,000	70	17,750,000
HUDSON	8	5,300,000	26	30,800,000	34	36,100,000
HUNTERDON	23	7,320,000	27	6,350,000	50	13,670,000
MERCER	26	3,800,000	46	16,200,000	72	20,000,000
MIDDLESEX	22	8,820,000	23	10,950,000	45	19,770,000
MONMOUTH	68	21,770,000	30	8,000,000	98	29,770,000
MORRIS	43	16,820,000	45	14,850,000	88	31,670,000
OCEAN	32	10,300,000	36	7,350,000	68	17,650,000
PASSAIC	22	7,350,000	28	12,200,000	50	19,550,000
SALEM	16	4,570,000			16	4,570,000
SOMERSET	22	6,960,000	19	3,270,000	41	10,230,000
SUSSEX	16	4,280,000	39	8,150,000	55	12,430,000
UNION	8	8,370,000	31	27,350,000	39	35,720,000
WARREN	29	6,200,000	5	1,350,000	34	7,550,000
TOTALS	588	193,150,000	601	303,620,000	1189	496,770,000
PROPOSED ADDITIONS TO STATE HIGHWAY SYSTEM (Not included in above Summary)					7	16,500,000
TOTAL NEEDED IMPROVEMENTS TO STATE HIGHWAY SYSTEM					1196	513,270,000

NOTE: LEGISLATION OF A HIGHWAY INTO THE STATE HIGHWAY SYSTEM HAS BEEN CONSIDERED AS EVIDENCE OF NEED OF IMPROVEMENT

NEW JERSEY
STATE HIGHWAY DEPARTMENT

STATUS OF NEEDED IMPROVEMENTS